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TITLE: Developing a Brief Method for the Simultaneous Assessment of Anaerobic and Aerobic Fitness

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13. ABSTRACT (Maximum 200 Words)

The objective of the proposed effort is to develop a brief and accurate method for the simultaneous assessment of anaerobic and aerobic fitness that is practical for both field and laboratory use. We anticipate that a method requiring an assessment period of only a few minutes or less, and two brief, minimally fatiguing efforts is possible. Each subject will undergo established tests to assess their maximal aerobic power and anaerobic power, respectively. Subjects will also complete a series of all-out efforts to establish their performance capabilities for efforts of different durations. Our analysis will focus primarily on two questions. First, we will determine if the relationship between the metabolic power available and all-out performance capabilities is common or dependent upon the fitness level of the individual. Second, we will determine whether the relationship between metabolic power and performance varies with the type of physical activity in which soldiers are engaged. We hypothesize that a single relationship will generalize to: 1) different individuals regardless of fitness level, and 2) to different types of physical activity. The development of a simple, practical and accurate method for assessing metabolic fitness and performance capabilities will provide a number of benefits.

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INTRODUCTION:

The objective of the proposed effort is to develop a brief and accurate method for the simultaneous assessment of anaerobic and aerobic fitness that is practical for both field and laboratory use. We anticipate that a method requiring an assessment period of only a few minutes or less, and two brief, minimally fatiguing efforts is possible. Each subject will undergo established tests to assess their maximal aerobic power and anaerobic power, respectively. Subjects will also complete a series of all-out efforts to establish their performance capabilities for efforts of different durations. Our analysis will focus primarily on two questions. First, we will determine if the relationship between the metabolic power available and all-out performance capabilities is common or dependent upon the fitness level of the individual. Second, we will determine whether the relationship between metabolic power and performance varies with the type of physical activity in which soldiers are engaged. We hypothesize that a single relationship will generalize to: 1) different individuals regardless of fitness level, and 2) to different types of physical activity. The development of a simple, practical and accurate method for assessing metabolic fitness and performance capabilities will provide a number of benefits.

BODY:

To date, there are no reportable research accomplishments for this report because official approval for testing of human subjects was not granted by the HSRRB until 1/13/2005. Thus, we are just now initiating the proposed experiments.

KEY RESEARCH ACCOMPLISHMENTS:

Research accomplishments to date have been technical in nature. These include setting up our custom force treadmill, troubleshooting software, refining filtering techniques for the treadmill force signals. Similar technical work has been accomplished with our cycle ergometer. We have also identified and streamlined the procedures for collecting EMG signals during cycling and treadmill locomotion.

REPORTABLE OUTCOMES:

There are no reportable outcomes at present because the experimental work began roughly one week ago.

CONCLUSIONS:

None

REFERENCES:

None

APPENDICES:

None